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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Kiff
Serial Number: 10/706,807
Filed: November 12, 2003
For: **Sculptured and Etched Textile Having Shade Contrast Corresponding to Surface Etched Regions**

Group Art Unit: 1771
Examiner: Juska

Commissioner for Patents
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Name: Linda - Ann Manley

DECLARATION OF INVENTOR MARK KIFF

1. I, Mark Kiff make this statement from my own personal knowledge. I am familiar with the subject matter of this patent application, and I am the inventor of the invention set forth in this patent application.
2. My education background is that I received a degree of Bachelor of Science in Chemical Engineering from the Florida Institute of Technology. Further, I had additional education, receiving a Masters degree in Business Administration in the year 1990 from Syracuse University.
3. I am employed as a Senior Development Engineer for Milliken & Company ("Milliken) in Spartanburg, South Carolina.
4. The invention relates to the discovery that it is possible to provide a color shade contrast that corresponds with carved or etched areas on a textile. Etching of a pile-containing fabric may occur using a process of providing a pile fabric which previously has received upon the pile surface an unfixed dye. Then, this fabric which has been treated with unfixed dye may be dried and screen printed. Screen printing (also known as "etching") is applied using an extremely strong alkali paste upon the fabric. Screen printing is followed by heating. The dye is then fixed in the subsequent

heating step, which uses an elongated dwell time sufficient to fix the dye. See specification, pages 4-5.

5. Figure 3 shows a schematic of one method of making a textile 20 as shown in Figures 1-2. In Figure 3, a textile 20 is provided. Unfixed dye is applied to the textile 20. A dye base shade is applied without chemically fixing the dyes to the fibers of the textile. "Fixing" a dye refers to the chemical or thermodynamic change effected upon a dye molecule that causes the dye molecule to firmly attach itself to a fiber, and/or exhibit color. This method of dye application can be accomplished by any method of continuous dyeing, including pad dyeing, blotch screen printing, ink jet printing, spraying, foam dyeing, exhaust dyeing, sublimation dyeing, dye injection, beam dyeing and beck dyeing. Specification pages 9-10.

6. In the specification, as illustrated in Figure 3, there is disclosed a step of drying the fabric with unfixed dye. Later in the process, there is a step of heating by steaming or thermosol methods. This heating step fixes the dye. Thus, the drying step precedes the heating and dye fixation, which means that the fabric will be at least partially dried before the majority of the dye is fixed. Specification page 9.

7. In the specification, the process is described in which the drying step is performed under conditions sufficient to at least partially dry the fabric without fixing a substantial portion of the unfixed dye to the pile of the fabric. This would be apparent to a person of skill in the art. For example, on page 10, it is explained that sometimes there will be little or no fixation of dyes, as when the dyes are discharged to white. In other instances, it is possible to use relatively higher temperatures, or longer dwell times, to fix the dyes only to some degree, and thereby create tone-on-tone discharging in the etched areas. This can occur when the fabric is at least partially dried without fixing a substantial portion of the unfixed dye to the pile of the fabric. The specification explains this technique, in which the fabric is dried to some extent before the subsequent step of dye fixation:

"Drying may employ a drying profile which can be altered to achieve a desired degree of dye fixation. Fabrics with no dye fixation during drying can be altered to achieve a desired degree of dye fixation. Fabrics with no dye fixation during drying and with appropriate dyes can be discharged to white. Using higher temperatures or longer dwell times [in the subsequent heating step], some fixation of the dyes can occur and it may be possible to create tone-on-tone discharging in etched areas." Specification, page 10.

8. On page 13, the specification further discloses that the drying step is performed under conditions sufficient to dry the fabric to some degree without fixing a substantial portion of the unfixed dye to the pile of the fabric. The Example 1 discloses in detail the manufacture of the pile fabric in this manner. Dye is applied. See page 13. The fabric is dried to some extent on a radio frequency dryer to ensure level and evenly distributed dye application during the drying step. See page 13. This step partially dries the fabric as would be appreciated by persons of skill in the art. Thus, drying precedes the fixation of the dye, and that means that the fabric is at least partially dried before the dye is fixed. Specification page 13. The specification provides: "At this stage the fabric had been dried, but dyes were not fixed in the fibers." See the Specification, page 13. Later, the specification describes the heating step that uses a relatively longer dwell time which serves to fix the dye:

"The dyes were fixed to the fabric by means of a superheated steamer. Fabric entered the steamer at a temperature of 180 degrees Celsius. The dwell time was about 8 minutes, which was adequate to fix the dyes."

9. One important feature of the invention is that the drying step precedes the dye fixation step, and that is fully disclosed in the application as filed. Also, the dwell time in the dye fixation step causes the dye to be fixed, which is also fully disclosed in the application as filed.

10. A person of skill in the art, upon reviewing the specification and drawings in this instance, would readily determine that the drying step is performed under conditions sufficient to at least partially dry the fabric without fixing a substantial portion of the unfixed dye to the pile of the fabric.